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THE

ELEMENTS OF LOGIC,

EXPLAINED BY

NUMEROUS EXAMPLES AND EXERCISES;

ADAPTED TO THE

CAPACITY OF YOUNGER STUDENTS,

AND

DESIGNED FOR ACADEMIES

AND

THE HIGHER CLASSES OF COMMON SCHOOLS.

BY CHARLES K. TRUE, A. M.

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PREFACE.

Logic, as a science, is simple and limited. Most modern treatises upon the subject have erred, by extending it beyond its proper department, on the one hand, and by excluding it from its legitimate province on the other. By some, it has been made to occupy the ground of mental science, and to usurp the place of rhetoric; by others, it has been denominated, "*an* art of reasoning;" as if there were any sound reasoning, which is not logical; while others have claimed for it, the unlimited sphere of teaching "the right use of reason." These errors have been exposed by Archbishop Whately, and the true nature and appropriate office of logic have been explained and vindicated. His learned and able treatise has obtained favor in the universities of Great Britain and the United States; and will go far, undoubtedly, to revive and extend a neglected, but invaluable science. The principles of that work have been adopted as the basis of the present volume.

The treatise, now presented to the public, is designed for a department hitherto unoccupied.

A science, so rudimentary in its principles, and so extensive in its applications, ought to be studied with the common elements of learning. Nor, when properly explained, will it be found any more difficult to the younger student than grammar or arithmetic. It will not task the powers, beyond what is desirable in salutary discipline, while its tendency to promote a habit of thinking will be greater than that of any other science. Indeed, logic must be studied early and rendered perfectly familiar, in order to be of much practical utility, in the business of life. It is so long postponed in existing systems of education, and, after all, so superficially studied, that there is scarcely one educated man in a thousand, who professes to be master of logic.

This work, though simple in its arrangement, embraces all that is essential to logic, while every thing, which does not strictly and necessarily come within the appropriate province of the science, has been excluded. Collateral matter and discursive explanations have been avoided, as rather calculated to embarrass and confuse the youthful mind. The principles and rules of the science have been stated distinctly, and illustrated by a variety of examples. If any further explanation is necessary, the enlightened teacher can easily supply it. The great points will thus stand out prominently to view, and all that is added, by way of comment, will be associated with them in the mind. The attention of the learner will not be distracted by many particulars, nor the memory encumbered with unessential matter.

For these reasons, the articles usually found in logical treatises, upon the different kinds of evidence, generalization, abstraction, rules of controversy, interpretation, method, the ten categories, and all metaphysical distinctions, have not been incorporated in this work. For an acquaintance with these subjects, the student is referred to other authors.

In the preparation of this work, the author acknowledges his indebtedness to Whately, Wesley, Hedge, S. E. Parker, and some of the older logicians; from them he has selected most of the examples, which are furnished, and, when a form of expression, in the statement of a rule or definition, has suited the design of the work, he has frequently adopted it without alteration.

The work is now committed to the public, with the earnest hope that it may contribute to the cause of truth, by encouraging, in the youth of this nation, the habit of sound reasoning.

DIRECTIONS FOR TEACHERS.

1. For the sake of precision and uniformity in the class, let the pupils commit to memory all the paragraphs that are numbered.

2. Let a large part of the exercises be written out fully on the slate, or the black-board.

3. In the examples in the appendix, let the pupil describe, 1st, the terms; 2d, the propositions; 3d, the form of the argument; 4th, if it be not a regular syllogism, let it be reduced to that form; 5th, if it be a regular syllogism, let it be changed to an enthymeme, such as would be used in common discourse; 6th, let it be stated whether it is, or is not, a valid syllogism; 7th, let the reason be assigned.

4. Any argumentative discourse may be analyzed, in like manner, after the student is perfectly familiar with all the principles and exercises of this book.

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ELEMENTS OF LOGIC.

INTRODUCTION.

1. Logic is the science and art of reasoning.

Reasoning is the process, by which truths, that are not known, or not admitted, are inferred from truths, that are known or admitted.

2. The principle, on which all reasoning proceeds, is simply this, viz;

Whatever is universally affirmed or denied of any class of things, may be affirmed or denied in like manner, of any thing comprehended in that class; as,

Whatever exhibits marks of design, must have had an intelligent author;
The world exhibits marks of design; therefore
The world must have had an intelligent author.

No human invention is perfect.
Language is a human invention;
Therefore, no language is perfect.

This principle may be called the LOGICAL AXIOM.

3. It is the province of Logic to explain this principle, to show how it is employed in argument, and to furnish Rules, by which the mind may be guided and assisted in reasoning.

QUESTIONS.

What is Logic?
What is Reasoning?
What is the principle on which all reasoning proceeds?
Can you give an example?
What is this principle called?
What is the province of Logic?

PART I.

ON TERMS.

4. The first part of Logic treats of TERMS.

A TERM is one or more words, expressing a thing or what is said of a thing; as,

Grass is green. Grass is a term and *green* is a term.

The sun shines brightly. The sun is a term and *shines brightly* is a term.

SECTION I.

DIFFERENT KINDS OF TERMS.

5. A SINGULAR TERM expresses only one individual; as,

Boston, Connecticut River, this rock, the discoverer of America.

6. A Common Term, is one which is not confined to a single object, as *City*, which may apply to Boston and to all other cities.

Rock, River, Conqueror, Mariner.

Strong, Happy, Wise, Great, Balmy, Dark.

7. A Relative Term expresses an object, that is related to another object; as, *Husband*, which is related to wife. *Parent*, which implies offspring.

Rider, Ruler, Brother, Servant, Magistrate.

8. An Absolute Term expresses a thing considered by itself, without reference to any other thing; as,

River, Mountain, Power, Wisdom.

9. A Positive Term expresses a thing as actually existing; as,

Sight, Seeing, Speech, A man speaking.

10. A Privative Term is one, which expresses the absence of an attribute from a thing capable of it; as, *a blind man*, which denotes the absence of the power to see.

A lame stag, A leafless oak, A dead plant.

11. A NEGATIVE TERM denotes the absence of an attribute from a subject, which is not capable of it at all; as,

A dumb statue, Lifeless marble, Silent dews.

12. AN ABSTRACT TERM is one which expresses a quality, without reference to any subject, in which it may be found; as,

Roundness, Hardness, Wisdom, Justice, Folly.

13. A CONCRETE TERM expresses both the attribute and the object to which it belongs; as, *wrong*, which expresses both an action and its quality. *Ruler*, which indicates an agent and his office.

Philosopher, Governor, Wise, Energetic, Hard.

14. AN INDEFINITE TERM is one, which does not define or mark out an object, and has the particle *not* attached to it, expressed or understood; as, *not-a-man*, which may imply any other being.

Not Brutus, Incorporal, Unfinished, Unwise.

15. A Definite Term is one which does define or mark out an object and has not the particle *not* attached to it; as,

Man, Brutus, Finished, Complete, Established.

QUESTIONS ON PART I.

What is the first part of Logic?
What is a Term?

QUESTIONS ON SECTION I.

Are there many kinds of terms?
What is a singular term?
What is a common term?
What is a relative term?
What is an absolute term?
What is a positive term?
What is a privative term?
What is a negative term?
What is an abstract term?
What is a concrete term?
What is an indefinite term?
What is a definite term?

EXERCISES ON SECTION I.

Money is plenty. *Money* is a term, because it is a word, that expresses a thing. [4] A term is one or more words, that express a thing or what is said of a thing. It is a common term, because [6] it is not confined to a single object. It is an absolute term, because it expresses a thing considered by itself. [8] *Plenty* is a term, because it is said of *money.* [4] A term is one or more words, that express a thing, or what is said of a thing. It is a common term, because [6] it is not confined to a single object.

A parent is under great responsibilities. *A parent* is a term, because it expresses something. [4] A term is one or more words, that express a thing, or what is said of a thing. It is a relative term, because it shows a relation to something else, as offspring. [7] A relative term expresses an object, that is related to another object.

Under great responsibilities, is a term, because it expresses what is said of *a parent.* [4] A term is one or more words, that express a thing, or what is said of a thing. It is a common term, because [6] it is not confined to a single object. It is a positive term, because it expresses a thing as actually existing. [9]

EXAMPLES.

1. Man is a rational being.
2. Cicero was a great orator.
3. This town is pleasantly situated.
4. Mothers have much solicitude.
5. Strength is acquired by exercise.
6. Far-sightedness is peculiar to seamen.
7. A dumb man is a pitiful object.
8. The silent tomb, the lifeless statue.
9. Wisdom is more precious than rubies.
10. Just and good are the laws of God.
11. The society is organized.
12. The plan is incomplete.
13. A horse running is an interesting sight.
14. A magistrate is an important character.
15. Wisdom is valuable.
16. A troop of cavalry is crossing the bridge.
17. Rulers are worthy of respect.

N. B. Several definitions will apply to the same term, as *Cæsar*, which is singular, absolute, definite.

SECTION II.

OPPOSITION OF TERMS.

16. CONSISTENT TERMS are those, which may at the same time be affirmed of the same thing; as, *dry* and *cold*.

17. OPPOSITE TERMS cannot at the same time be affirmed of the same thing; as, *black* and *white*.

The opposition of terms is fourfold.

18. RELATIVE OPPOSITION is that which is between relative terms, that cannot at the same time be applied to the same subject; as, *father* and *son*, *servant* and *master*.

19. CONTRARY OPPOSITION is that between absolute terms, that expel one another from a subject capable of either; as, *wise* and *foolish*.

20. PRIVATIVE OPPOSITION is that between a positive and privative term; as, *seeing* and *blind*.

21. **Contradictory Opposition** is that between a definite and an indefinite term; as, *Cæsar* and *not Cæsar.*

QUESTIONS ON SECTION II.

What are consistent terms?
What are opposite terms?
How many kinds of opposition are there?
What is relative opposition?
What is contrary opposition?
What is privative opposition?
What is contradictory opposition?

EXERCISES ON SECTION II.

White and hard. These are consistent terms, because they may be at the same time affirmed of the same thing. [6]

Soft and hard. These are opposite terms because they cannot, at the same time, be affirmed of the same thing. [16] It is contrary opposition, [19] because it is between absolute terms that expel one another from a subject capable of either.

EXAMPLES.

1. Good and small.
2. Master and servant.
3. Ruler and subject.
4. Great and small.
5. Lovely and hateful.
6. Hearing and deaf.
7. Corporal and incorporal.
8. Finished and unfinished.
9. Long and short.
10. Husband and wife.
11. Hard and dark.
12. Free and base.
13. Gentle and violent.
14. Young and old.

SECTION III.

SPECIES AND GENUS.

22. Species is a term, that denotes a class, including several individuals; as *Beast,* which includes the horse, cow, lion, deer, &c.

23. Genus is a term, that denotes a class, that includes several species; as *Animal,* which includes beast, bird, fish, man, insect.

24. The ESSENTIAL DIFFERENCE denotes an essential part of a species, that distinguishes it from other species; as *rational*, which is the essential difference of the species man, because it is the essential part of man, that distinguishes him from beast, bird, &c.

25. A PROPERTY is something necessarily joined to the essential difference; as *power of laughing*, which is the property of man as a rational being.

26. AN ACCIDENT is something that may be, or may not be joined to the essential difference, as *tall* or *short*, *living in London*, *born in Paris*.

QUESTIONS ON SECTION III.

What is a species?
What is a genus?
What is an essential difference?
What is a property?
What is an accident?

EXERCISES IN SECTION III.

This small bird is an animal that has wings, feathers, and a hard bill.

The term *bird* denotes a species, because [22] it denotes a class, which has several individuals under it, as sparrow, eagle, &c. *That has wings, feathers, and a hard bill,* describes the essential difference, because [24] it is that essential part of the species bird, that distinguishes it from other species, as fish, beast, &c. *Small* indicates an accident, [26] for it is something that may be, or may not be, joined to the essential difference.

EXAMPLES.

1. This tree is a Pine, with very thick boughs.
2. This is a small magnet, having the power of attraction, and it turns upon a pivot in a direction north and south.
3. This vessel is a ship, having three masts, full rigged, and very long.
4. A republic is a government in which the people have sway and choose their own rulers.
5. This seminary of learning is a college.
6. A lame animal.
7. A blind stag.

8. A bird with blue feathers and broad wings.

9. Mercury is the planet nearest the sun.

10. A circle is a figure, whose circumference is, in every part, equally distant from the centre.

11. A whale is the largest of fish, and is often seen in our waters.

12. A plant is an organized being, destitute of sensation.

SECTION IV.

DIVISION.

27. Division is the distinct enumeration of the several things signified by a term; as,

New-England is divided into Maine, New-Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

Bark signifies the rind of a tree and likewise a small ship.

Rule of Division. *The several parts must not be contained in one another, and all together must be exactly equal to the thing divided.*

QUESTIONS ON SECTION IV.

What is Division?
Give an example.
What is the Rule of Division?

EXERCISES IN SECTION IV.

A tree is divided into roots, trunk, branches, and boughs. This is an example of division, because it is the distinct enumeration of the several parts of a tree. [27] But it is not accurate, for the parts, *branches* and *boughs*, are contained in each other, contrary to the rule. [28]

EXAMPLES.

1. The year is divided into Summer, Autumn, Winter, and Spring.
2. Metals are divided into gold, copper, and iron.
3. The Human race is divided into Americans, Africans, Asiatics, Chinese, and Europeans.
4. King signifies a ruler and also a man's name.

5. Mercury is the name of a heathen Deity, a planet, a plant, and quicksilver.

6. The globe consists of land and water.

7. Form signifies shape and ceremony.

8. Trump is a trumpet and a winning card.

9. Orchard is an enclosure for apple trees and fruit trees.

10. A solid body has length and breadth.

SECTION V.

DEFINITIONS.

29. **Definition** is an expression explaining a term, so as to distinguish or separate it from every thing else.

30. A **Nominal Definition** distinguishes the meaning of a term by an equivalent term, which is better known; as,

Decalogue—the Ten Commandments.

31. A **Physical Definition** lays down the real parts of the essence; as,

Injustice is the intentional violation of another's rights.

A plant has leaves, stalks, roots.

32. A LOGICAL DEFINITION assigns the Genus and the Essential Difference of the thing defined; as,

Man is a rational animal.

33. ACCIDENTAL DEFINITION, or DESCRIPTION, assigns the accidents or properties of the thing defined; as,

Man is an animal, that uses fire to dress his food.

Columbus was a native of Genoa.

34. It will be observed, that more than one of these kinds of definition will coincide, in matters strictly scientific.

35. RULE OF DEFINITIONS. *A Definition must be adequate, that is, not too extensive nor too narrow for the thing defined; plainer, and contained in a suitable number of proper, not figurative terms.*

36. The chief concern of Logic with definitions is, that words be not used in *different senses* in argument.

QUESTIONS ON SECTION V.

What is definition?

What is a nominal definition?

What is a physical definition?

What is a logical definition?

What is an accidental or descriptive definition?

Do more than one of these different kinds of definition coincide in any case?

What is the rule of definition?

What is the principal concern of logic with definitions?

EXERCISES IN SECTION V.

A Fish is an animal inhabiting the water. This is a definition, but it is not an accurate definition, for it is *too narrow*; [35] for some insects inhabit the water, and also some beasts and reptiles a part of the time. It is therefore contrary to the rule.

Bird is an animal that has feathers, wings, and a hard glossy bill. This is a definition, because it distinguishes *bird* from every other thing. [29] It is a logical definition, [32] for it assigns the genus and essential difference of *bird, viz. animal*, and having *feathers, wings, and hard glossy bill.* It is accurate for it conforms to the rule. [35.]

EXAMPLES.

1. Pleiades—the seven stars.
2. A king is the ruler of a people.
3. A square is a figure having four sides and four right angles.
4. Surprise is a state of mind produced by some unexpected occurrence.
5. A circle is a figure, whose circumference is, in every point, equally distant from the centre.
6. Suicide is self-murder.
7. Wine is the juice of the grape.
8. Whiteness is the color arising from the prevalence of brightness.
9. A plant is an organized being destitute of sensation.
10. Rhode Island is a state in New-England.
11. Man is a risible animal.
12. Mercury is the planet nearest the Sun.

13. A church is a congregation of faithful men, in which the word of God is preached, and the ordinances duly administered.

14. Punishment is pain inflicted for a crime, in order to correct the offender.

PART II.

OF PROPOSITIONS.

The second part of Logic treats of Propositions.

SECTION I.

37. A Proposition is a sentence, whereof one part is affirmed or denied of the other; as,

Man is an animal.
Moses and Thomas are not Statesmen.
All animals are mortal.

38. The Subject of a proposition is that part, of which something is affirmed or denied; as, in the last example, *all animals* is the subject.

39. The Predicate of a proposition is that, which is affirmed or denied of the subject; as, in the same example, *mortal* is the predicate.

40. The Copula is the verb by which the two terms are connected; as *are*, in the above example.

41. Sometimes one part of a proposition is contained in another; as the *wind blows*, *I think*, which imply, *I am thinking*, *the wind is blowing*.

42. The subject of a proposition usually stands first and the predicate last; but this order is sometimes inverted, as,

In the West are extensive Prairies.

QUESTIONS ON PART II.

Of what does the second part of Logic treat?

ON SECTION I.

What is a proposition?

What is the subject of a proposition?

What is the predicate of a proposition?

What is the copula of a proposition?

Is one part sometimes contained in another?

Which stands first in order, the subject or predicate?

EXERCISES IN SECTION I.

Socrates was a philosopher. This is a Proposition, because [37] it is a sentence containing two terms, whereof one is affirmed or denied of the other. *Socrates* is the subject of the proposition, because [38] it is that term, of which something is affirmed. *Was* is the copula, because [40] it connects the two terms. *A philosopher* is the predicate, because [39] it is affirmed of *Socrates* as the subject.

EXAMPLES.

1. Matter is divisible.
2. Man is not infallible.
3. Christopher Columbus was the discoverer of America.
4. A wise man rules his own spirit.
5. George Washington was a brave but prudent general.
6. The world exhibits marks of a great convulsion.
7. I see—he feels—you walk—they run.
8. All tyrants deserve death.
9. Blessed are the pure in heart

10. The troops are marching forward.
11. The wicked man is not happy.
12. Summer approaches.
13. Time is passing away.

SECTION II.

DISTINCTION OF PROPOSITIONS.

43. PROPOSITIONS are distinguished into affirmative and negative, which is a distinction with respect to Quality.

44. AN AFFIRMATIVE PROPOSITION is one, in which the predicate is declared to agree with the subject; as,

Man is a fallible creature.

45. A NEGATIVE PROPOSITION is one, in which the predicate is declared to disagree with the subject; as,

The world is not eternal—no miser is happy.

46. Propositions are also distinguished into Universal and Particular, which is a distinction in respect to Quantity.

47. A **Universal Proposition** is one in which the predicate is asserted of the whole of the subject.

The signs of universality are *all*, *every*, *no*, *neither*, and the like, which are expressed or understood; also, proper names, as John, London; as,

All men are mortal.
No discontented man is happy.
London is a vast metropolis.
Planets revolve about the sun.

48. A **Particular Proposition** is one, in which the predicate is asserted of only a part of the subject.

The signs of particularity are *some*, *many*, *most*, *few*, *several*, and the like; as,

Some islands are fertile.
Many buildings were consumed.
Some culprits were not punished.

49. A **Universal Affirmative Proposition** is one, in which the predicate is said to agree with the *whole* of the subject; as, in the

above example—*all men are mortal.* This is not only a universal proposition but a universal affirmative proposition.

All tyrants deserve death.

50. A UNIVERSAL NEGATIVE PROPOSITION, is one, in which the predicate is said to disagree with *the whole* of the subject; as, *no discontented man is happy*, which is not only a universal proposition but a universal negative proposition.

No sins are excusable.

51. A PARTICULAR AFFIRMATIVE PROPOSITION, is one, in which the predicate is asserted to agree with only a part of the subject; as, *some islands are fertile*, which is not only a particular proposition but a particular affirmative proposition.

Several men were drowned.

52. A PARTICULAR NEGATIVE PROPOSITION is one, in which the predicate is asserted to disagree with only part of the subject; as, *some culprits were not punished*; which is not

only a particular proposition, but a particular negative proposition.

Many islands are not inhabited.

53. A, E, I, O, are symbols, employed to represent these propositions: thus,

A stands for universal affirmative.
E stands for universal negative.
I stands for particular affirmative.
O for particular negative.

QUESTIONS ON SECTION II.

What is meant by the quality of propositions?

What is meant by the quantity of propositions?

What is an affirmative proposition?

What is a negative proposition?

What is a universal proposition?

What is a particular proposition?

What are the signs of universality?

What are the signs of particularity?

What is a universal affirmative proposition?

What is a universal negative proposition?

What is a particular affirmative proposition?

What is a particular negative proposition?

What does the symbol A represent?

What does E represent?

What does I represent?

What does O represent?

EXERCISES IN SECTION II.

All laws are not enforced. This is a negative proposition because [45] it is one, in which the predicate is asserted to disagree with the subject. It is also a universal negative proposition: because, [50] it is one, in which the predicate is asserted to disagree with the whole of the subject. *All* is the sign of universality [47] and shows the whole of the subject is taken. E is the symbol of this proposition [53.]

Some men are eccentric. This is an affirmative proposition, because [44] the predicate is declared to agree with the subject. It is also a particular affirmative, because [51] the predicate is asserted to agree with only a part of the subject. *Some* is the sign of particularity [48] and shows that the subject is taken in only a part of its extent. I is the symbol of this proposition [53.]

EXAMPLES.

1. All sins are inexcusable.
2. Paris is a gay city.
3. Some animals are sagacious.
4. Men are accountable beings.
5. Every effect must have an adequate cause.
6. Few men become suddenly rich.
7. Washington was a wise general.
8. Many criminals are not brought to punishment.
9. Planets are bodies moving in orbits about the sun.
10. Islands are surrounded by water.
11. The Christian religion is attested by miracles.
12. Every sinner will be punished.
13. All flowers are beautiful.
14. Franklin was the inventor of lightning rods.
15. Not all his foes could alarm him.
16. Some birds are web-footed.
17. No flower is always in bloom.

SECTION III.

FARTHER DISTINCTIONS OF PROPOSITIONS.

54. A Simple Proposition is one whose subject and predicate are each composed of a single term; as,

Truth is invaluable.
The eye is a natural telescope.

55. A Complex Proposition is one, whose subject or predicate or both contain more than a single term; as,

That one man should be punished for the crimes of another is unjust.
Joy and sorrow are opposite qualities.

56. A Compound Proposition is one, that has two or more subjects or predicates or both,—and may be resolved into two or more distinct propositions; as,

Time and chance happen to all men.
Spring, summer, autumn, winter, are seasons of the year.
Washington and Alfred were prudent, valiant, just and benevolent.

57. A Modal Proposition is one, in which the predicate is affirmed or denied of

the subject in a certain way, mode or manner; as,

Thomas accidentally killed John.
The shower may come before night.

58. A Conditional Proposition, is one whose parts are limited by the particle *if*, expressing a condition; as,

If there be no fire, there will be no heat.
Cæsar deserved death, if he was a tyrant.

59. A Disjunctive Proposition asserts that a subject agrees with one of two or more predicates, or a predicate with one of two or more subjects; as,

It is either day or night.
Prosperity or adversity will be your lot.

QUESTIONS ON SECTION III.

What is a simple proposition?
What is a complex proposition?
What is a compound proposition?
What is a modal proposition?
What is a conditional proposition?
What is a disjunctive proposition?

EXERCISES IN SECTION III.

Beasts, birds and insects have life, sense and motion. This is a compound proposition because [56] it has three subjects and three predicates, and can be reduced to nine distinct propositions. Thus—*beasts have life, beasts have sense, beasts have motion, birds have life, &c.*

That such news has arrived is probably false. A complex proposition, because [55] both its subject and predicate are composed of more than a single term. It is also a modal proposition, because [57] the predicate is affirmed of the subject in a certain mode i. e. as probable.

EXAMPLES.

1. The storm begins to rage.
2. The small and the great, the bond and the free, shall be there.
3. He will possibly do more harm than good.
4. Few men can bear contempt with patience.

5. Ye cannot serve God and mammon.

6. This proposition is either true or false.

7. The earth must move if the sun be fixed.

8. Some birds lie dormant during the winter.

9. Hanibal though unfortunate was a great general.

10. If there be no providence, prayer avails not.

11. There is no peace to the wicked.

12. The letter will probably reach him before morning.

13. Wisdom is the principal thing.

14. Either the sun or the moon will be eclipsed that day.

SECTION IV.

DISTRIBUTION OF THE TERMS OF PROPOSITIONS.

60. A Term is said to be distributed, when it is taken universally or in its utmost extent, so as to stand for every thing, to which it is capable of being applied; and undis-

tributed, when it stands for a portion only of the things signified by it. In the following example, the subject is distributed and the predicate undistributed.

All birds are animals,

In the following, the predicate is distributed and the subject undistributed.

Some birds are not web footed,

RULE 1.

61. All universal propositions distribute the subject; all negative the predicate; as,

All men are mortal.
Great Britain rules the ocean.
Some men are not wise.
The fixed stars twinkle.
No miser is a happy man.

RULE 2,

62. A distributes the subject, O the predicate, I neither, and E both; as,

A. *All tyrants* deserve death.
I. Some tyrants deserve death.
E. *No virtue* is *an evil.*
O. Some rich men are not *good men,*

QUESTIONS ON SECTION IV.

When is a term said to be distributed ?
When is it said to be undistributed ?
What is the first rule of distribution ?
What is the second rule of distribution ?

EXERCISES IN SECTION IV.

Some animals are amphibious. In this proposition both the terms are undistributed, because [60] they stand only for a part of the things signified by them. It is the proposition I, and according to [62] A distributes the subject, O the predicate, I neither, and E both.

Wicked men cannot always prosper. Here both the terms are distributed, because, [60] they are taken universally, so as to stand for any thing to which they are capable of being applied. *All* is understood before wicked men [47.] Moreover it is a universal negative, E. The rule is, [62] A distributes the subject, O the predicate, I neither, and E both.

EXAMPLES.

1. Many ships were lost in the gale.
2. The storm did not last long.

3. The world is not eternal.

4. Every thing in the political world looks dark.

5. No good man can hate his brother.

6. Every sin is a violation of the divine law.

7. All visible things had a beginning.

8. Some difficult things are not evils.

9. Charity never faileth.

10. Charity suffereth long and is kind.

11. The flowers of the field perish.

12. Columbus discovered America.

13. Matter is not self-created.

14. Logic is the art of reasoning.

15. Rhetoric teaches how to select and arrange arguments.

16. Logic is but a part of metaphysics.

17. Chemical affinity never formed an organized being.

SECTION V.

OPPOSITION OF PROPOSITIONS.

63. Two propositions are said to be opposed, which, having the same subject and predicate, yet differ in quantity, or quality, or both; as,

A. All islands are fertile,
I. Some islands are fertile, } in quantity.

A. All islands are fertile,
E. No island is fertile, } in quality.

A. All islands are fertile,
O. Some islands are not fertile, } in both.

E. No island is fertile,
I. Some islands are fertile, } in both.

64. With any given subject and predicate, four distinct propositions may be stated, viz. A, E, I, and O; any two of which may be said to be opposed; as,

A. Every disease is contagious.
E. No disease is contagious.
I. Some diseases are contagious.
Or, O. Some diseases are not contagious.

65. There are four different kinds of opposition.

66. Contrary Opposition is when a universal affirmative is opposed to a universal negative; as,

A. All human inventions are perfect.
E. No human invention is perfect.

67. Subcontrary Opposition is when the particular affirmative is opposed to the particular negative; as,

I. Some human inventions are perfect.
O. Some human inventions are not perfect.

68. SUBALTERN OPPOSITION is when a universal affirmative is opposed to a particular affirmative, or a universal negative to a particular negative; as,

A. Every human invention is perfect.
I. Some human inventions are perfect.

Or,

E. No human invention is perfect.
O. Some human inventions are not perfect.

69. CONTRADICTORY OPPOSITION is when the universal affirmative and the particular negative are opposed, or the universal negative and the particular affirmative; as,

A. Every human invention is perfect.
O. Some human inventions are not perfect.

Or,

E. No human invention is perfect.
I. Some human inventions are perfect.

70. Four conditions are requisite to constitute a contradiction, viz. To speak of the same thing; 1. in the same sense; 2d. in the same respect; 3d. with regard to the same third thing, and 4th. at the same time. If any of these be wanting, *is* and *is not* may agree. As,

1. *An opinion is and is not faith.* It is an inoperative and unacceptable belief; it is not an effectual and saving faith; 2d. *Troilus is and is not red-haired.* He is with respect to his head; he is not with respect to his beard; 3. *Socrates is and is not long-haired,* he is in comparison with Scipio; he is not in comparison with Xenophon. 4th. *Solomon was and was not a good man.* He was in his youth; he was not in his middle age.

THE RULES OF OPPOSITION.

RULE 1.

71. **Contradictory Propositions** are always the one true and the other false; as,

A. All men are mortal.
O. Some men are not mortal.

E. No tyrant deserves death.
I. Some tyrants deserve death.

RULE 2.

72. **Contrary Propositions** may be both false, but never both true; as,

A. Every disease is contagious.
E. No disease is contagious.

RULE 3.

73. SUBCONTRARIES are never both false, but they may be both true.

I. Some amusements are innocent.
O. Some amusements are not innocent.

RULE 4.

74. SUBALTERNS are sometimes both true, sometimes both false and sometimes one is true and the other false; as,

A. Every defensive war is just.
I. Some defensive wars are just.
E. Every crime is not an evil
O. Some crimes are not an evil.
A. Every measure of government is wise.
I. Some measures of government are wise.

QUESTIONS ON SECTION V.

What is meant by the quantity of a proposition?

What do you understand by the quality of propositions?

When are propositions said to be opposed?

With any given subject or predicate, how many different propositions may be stated?

Give an example.

What do the symbols A, E, I and O denote?

Are A and E opposed in quantity or quality?

Are I and O opposed in quantity or quality?

Are A and I opposed in quantity or quality?

Are E and O opposed? How?

How are E and I opposed? E and O? E and A?

How many different kinds of opposition are there?

What is contrary opposition?

What is subcontrary opposition?

What is subaltern opposition?

What is a contradictory opposition?

How many conditions are requisite to a contradiction?

What is the first rule of opposition?

What is the second rule of opposition?

What is the third rule of opposition?

What is the fourth rule of opposition?

EXERCISES IN SECTION V.

All islands are surrounded by water.
Some islands are surrounded by water.

These propositions are opposed; because, [63] they have the same predicate and subject, and differ in quantity. It is a subaltern opposition; because, [68] a universal affirmative is opposed to a particular affirmative. They are both true, according to Rule IV. [74]. "Subalterns are sometimes both true, sometimes both false, and sometimes one is true and the other false."

EXAMPLES.

Every insect is an animal.
No insect is an animal.

Some horses are unruly.
Some horses are not unruly.

No intolerant men are good men.
Some intolerant men are good men.

All pleasures are hurtful.
Some pleasures are not hurtful.

All hopes are consoling.
Some hopes are consoling.

No virtuous man is ungrateful.
Some virtuous men are ungrateful.

All islands are fertile.
Some islands are fertile.

All animals are mortal.
All animals are not mortal.

Every patriot is a Christian.
Some patriots are not Christians.

Some diseases are contagious.
All diseases are contagious.

SECTION VI.

CONVERSION OF PROPOSITIONS.

75. A proposition is said to be converted, when its terms are transposed and the truth preserved; as,

Some painters are poets.
Some poets are painters.

76. The proposition to be converted is

called the ORIGINAL, that into which it is converted the CONVERSE; as,

Original. No reptile is a quadruped.
Converse. No quadruped is a reptile.

77. SIMPLE CONVERSION is where the subject and predicate simply change places; as,

Some boasters are cowards.
Some cowards are boasters.

78. PARTICULAR CONVERSION is where, in transposition, the converse requires a particular term to preserve the truth of the original; as,

All swallows are birds.
Some birds are swallows.

79. RULE. *In all cases the converse must be truly inferred from the original, and no term must be distributed in the converse, that was not distributed in the original.* Hence,

A. All men are mortal.
All mortals are men.

is not proper conversion, for A distributes the subject only, [48] but *mortal* is the predicate, therefore its distribution in the converse, viz. *all mortals*, is unwarranted.

80. The converse of a universal affirmative proposition is a particular affirmative; or more briefly, A is converted into I.

A. All men are mortal.
I. Some mortals are men.

81. The converse of a universal negative is a universal negative—E into E; as,

E. No deer is an elephant.
E. No elephant is a deer.

82. Particular affirmative propositions are converted only into the same—I into I; as,

I. Some infidels are learned men.
I. Some learned men are infidels.

83. A particular negative is inconvertible; as,

O. Some birds are not swallows.

You cannot say,

O. Some swallows are not birds;
E. No swallows are birds.

For these are negative propositions, and distribute the predicate, [61] which is *birds*; but, in the original, *birds*, is not distributed. [79]

QUESTIONS ON SECTION VI.

When are propositions converted?

What is that proportion called which is to be converted?

What is the converse of a proposition?

What is simple conversion?

What is particular conversion?

What is the rule for conversion?

What do you understand by the distribution of terms?

What are the rules for distribution?

How is an universal affirmative proposition converted?

How is a particular affirmative proposition converted?

How is a universal negative converted?

Is a particular negative convertible?

EXERCISES IN SECTION VI.

No virtuous man is a rebel. This example is a universal negative, and may be converted into, *No rebel is a virtuous man,* because, [81] the converse of a universal negative is a universal negative. The converse is truly inferred from the original, [79] and no term is distributed in the converse which is not distributed in the original. For according to [62] rule, E distributes both subject and predicate.

Some fruits are unpalatable. This is a particular affirmative proposition, and may be converted into, *Some unpalatable things are fruits*, according to [82.] Particular affirmative propositions are convertible only into the same, and because, [79] rule, "The converse must be inferred from the original, and no term must be distributed in the converse that was not in the original," and according to [62] rule, I distributes neither subject nor predicate.

EXAMPLES.

1. All Britons are freemen.
2. Some Britons are freemen.
3. No unhappy man is a perfect Christian.
4. Some fish are not salmon.
5. Some orators are not statesmen.
6. No offensive wars are righteous enterprises.
7. Every learned man is a thankful man.

8. Some great geniuses are ignorant men.
9. Some parrots are not talkers.
10. Every true Christian is a patriot.
11. Soms angels are sinners.
12. Some amusements are hurtful.
13. All birds have feathers and wings.

PART III.

OF ARGUMENT.

84. The third part of Logic treats of Argument, or reasoning expressed in words.

85. An Argument is an expression, in which, from something laid down and granted as true, something else beyond this must be admitted to be true, as following necessarily from the other.

That which is laid down is called the Premises; that which results therefrom is called the Conclusion.

86. Every valid argument must conform to the Logical axiom, that being the only principle on which all reasoning proceeds, viz. [2] *Whatever is universally affirmed or denied of any class of things, may be affirmed or denied in like manner, of any thing compre-*

hended in that class; or, in other words, *Whatever is affirmed or denied of a distributed term may be affirmed or denied of every thing contained in it.* As,

All tyrants deserve death ;
Cæsar was a tyrant ;
Therefore Cæsar deserves death.

No man enslaved by appetite can be happy ;
The sensualist is enslaved by appetite ;
Therefore, no sensualist can be happy.

SECTION I.

OF SYLLOGISM.

87. An argument stated at full length, and in its regular form is a SYLLOGISM. The above examples are syllogisms ; so also,

All men are mortal.
John and James are men ;
Therefore John and James are mortal.

88. Every regular syllogism contains three, and only three terms, called the Minor term, Major term, and Middle term.

All $\underset{3}{\textit{tyrants}}$ $\underset{2}{\textit{deserve death}}$.

$\underset{1}{\textit{Cæsar}}$ was a $\underset{3}{\textit{tyrant}}$,

Therefore, $\underset{1}{\textit{Cæsar}}$ $\underset{2}{\textit{deserved death}}$.

89. The subject of the conclusion is the

minor term; the predicate of the conclusion is the major term; and the other term, with which these are compared is the middle term; as,

All tyrants deserve death;
Middle.
Cæsar was a tyrant;
Minor. *Major.*
Therefore Cæsar deserved death.

90. Every regular syllogism contains three, and only three propositions, called the Major premise, the Minor premise, and the Conclusion.

91. THE MAJOR PREMISE is that, in which the major term is compared with the middle term.

Major Premise. All tyrants deserve death;
Cæsar was a tyrant;
Therefore, Cæsar deserved death.

92. THE MINOR PREMISE is that, in which the minor term is compared with the middle term; as,

All tyrants deserve death;
Minor Premise. Cæsar was a tyrant;
Therefore, Cæsar deserved death.

93. THE CONCLUSION is that, in which the major and the minor terms are compared together.

All tyrants deserve death;
Cæsar was a tyrant;
Conclusion. Therefore Cæsar deserved death.

94. In every regular syllogism the major premise is placed first, the minor next, and the conclusion last; as,

Major Premise. All enslaved by appetite are not freemen.
Minor Premise. The sensualist is enslaved by appetite;
Conclusion. Therefore, the sensualist is not a freeman.

QUESTONS ON PART III.

Of what does the third part of Logic treat?

What is reasoning?

What is an argument?

On what principle does all reasoning proceed?

Give examples.

QUESTIONS ON SECTION I.

What is a syllogism?

How many terms has every syllogism?

What are they called?

What is the minor term?

What is the major term?

What is the middle term?

How many propositions are contained in a syllogism?

What are they called?

What is the major premise?

What is the minor premise?

What is the conclusion?

In what order do these propositions stand in a regular syllogism?

EXERCISES ON SECTION I.

No virtue is an evil;
Some difficult things are virtues;
Therefore, some difficult things are not evils.

This is an argument, because, [85] from something laid down as granted to be true, something else is inferred to be true. It is a valid argument, because, [86] a thing is denied of individuals under a class, of which class that thing is universally denied. *Evil* is denied universally of *virtues*; but some *difficult things* are included in *virtues* as a class; therefore evil may be denied of some *difficult things.* Or [86] "What is universally affirmed or denied of a distributed term, may be affirmed or denied of every thing contained in it: *evil* is denied of *virtue*, which is here distributed, because E distributes both terms, [62] and *some difficult things* are contained in this distributed, term; therefore evil may be denied of them. It is a syllogism, because, [87] "it is an argument stated at full length in its regular form." It has three terms only: *some difficult things* is the minor term, because, [89] it is the subject of the conclusion: *not evils* is the major term, because, [89] it is the predicate of the conclusion: *virtues* is the middle term, because, [89] it is the term with which the other two are compared. *No virtue is an evil,* is the major premise, because, [91] the major term is therein compared with the middle term. *Some difficult things are virtues,* is the minor premise, because, [92] the minor term is therein compared with the middle term: the remaining proposition is the conclusion, because, [93] in it the minor and major terms are compared together.

EXAMPLES.

1. All the faithful are dear to God;
Some that are afflicted are faithful;

Therefore, some that are afflicted are dear to God.

2. No work that exhibits marks of design can be the effect of chance;
The world exhibits marks of design,
Therefore, the world cannot be the effect of chance.

3. That which improves the mind is useful;
Study improves the mind;
Therefore, study is useful.

4. No discontented man is a happy man;
Every wicked man is a discontented man;
Therefore, no wicked man is a happy man.

5. Every effect must have had an adequate cause;
The formation of the world is an effect;
Therefore, it must have had an adequate cause.

6. No literary production is perfect.
This treatise is a literary production;
Therefore, this treatise is not perfect.

7. Every vegetable is combustible;
Every tree is a vegetable;
Therefore, every tree is combustible.

SECTION II.

THE RULES OF SYLLOGISM.

95. The validity of all arguments may be tested by the logical axiom [86]; and no syllogism is valid, which does not conform to it.

96. It cannot, however, always be directly and conveniently applied; as, for example, in the following valid syllogism.

No virtues are evils;
All virtues are difficult; therefore,
Some difficult things are not evils.

This syllogism may be altered, by converting the minor premise, according to [80], and then it will plainly appear to conform to the logical axiom; thus,

No virtues are evils;
Some difficult things are virtues; therefore,
Some difficult things are not evils.

97. But to avoid the inconvenience of altering a syllogism, in order to apply the logical axiom, logicians have adopted the following two canons, by which to test the validity of syllogisms.

98. Canon I. *If two terms agree with*

one and the same third, they agree with each other.

99. CANON II. *If one term agrees and the other disagrees with one and the same third, these two disagree with each other.*

EXAMPLES.

All poets are men of genius.
Cowper and Campbell were poets; therefore,
Cowper and Campbell were men of genius.

Every good man is charitable.
Some rich men are not charitable; therefore,
Some rich men are not good men.

100. In order for a syllogism to conform to these Canons, the following Rules must be observed:

RULE 1.

101. *Every syllogism must have three, and only three terms, and three and only three propositions.*

The following example has, in reality, four terms, for the middle term, *repentance,* is used in two different senses. It cannot, therefore, rest upon either of the two canons of logic;

for the two other terms are not, compared with one and the same third.

Repentance is a good thing;
Wicked men abound in repentance;
Therefore, wicked men abound in a good thing.

Ambiguous terms are fruitful sources of error in argument.

RULE 2.

102. *The middle term must be distributed once at least in the premises.*

The following example violates the rule:

Granite is a mineral;
Lead is a mineral;
Therefore, lead is granite.

The middle term, *mineral* is undistributed; hence *granite* is compared to *mineral* in a part of its extension, and *lead* is compared to it in another part of its extension; therefore, neither of the canons of logic are complied with—for the two extremes are not compared to one and the same third.

RULE 3.

103. *No term must be distributed in the conclusion, which was not distributed in one of the premises.*

The following violates the rule:

Some diseases are contagious;
No rheumatic fevers are contagious;
Therefore, rheumatic fevers are not diseases.

Here you employ the term *diseases* in the whole of its extent in the conclusion, [60, 62] while you employ it in only a part of its extent in the premises, thereby introducing in reality a fourth term. This, therefore, does not rest on either of the canons.

RULE 4.

104. *Two negative or two particular premises prove nothing.* As,

Slate is not a metal.
Flint is not a metal.

Here two terms disagree with a third. This is not according to the canons, which requires either that both should agree with the third, or one agree and the other disagree.

Some bad men are eloquent orators;
Some good men are eloquent orators;
Therefore, some good men are bad men.

Here you have the middle term undistributed, which is contrary to Rule 2d, and therefore, not according to the canons.

Some bad men are eloquent orators.
Some good men are not eloquent orators;
Therefore, some good men are not bad men.

This is contrary to Rule 3d.

RULE 5.

105. *If either premise be negative or particular, so also is the conclusion.* As,

No virtuous man is a rebel.
X and Y are virtuous men:
Therefore, X and Y are not rebels.

Here one term is said to disagree with a middle and the other to agree, hence they disagree with each other and the conclusion must be negative.

All who study diligently deserve reward.
Some scholars study diligently;
Therefore, some scholars deserve reward.

Here is a particular premise, and you cannot draw any thing but a particular conclusion, for a universal conclusion would be contrary to Rule 3d, and therefore against the canons.

QUESTIONS ON SECTION II.

How may the validity of all arguments be tested?

Is any syllogism valid that does not conform to the logical axiom?

Can it be always conveniently applied?

Can you give an example in which it would be somewhat tedious to apply it?

To avoid this inconvenience what have logicians adopted?

What are the two Canons of syllogism?

How can you determine whether a syllogism conform to these canons?

What is Rule First?

Can you give an example that violates this rule?

Can you show why it does not conform to the canons?

What is Rule Second?

Can you give an example that violates this rule?

Can you show why it does not conform to the canons?

What is Rule Third?

Can you give an example that violates this rule ?

Can you show why it does not conform to the canons ?

What is Rule Fourth ?

Can you illustrate it by examples ?

What is Rule Fifth ?

Can you illustrate it by examples ?

EXERCISES IN SECTION II.

No person of dissolute habits is a safe companion.

Some persons of improved minds are of dissolute habits ;

Therefore, some persons of improved minds are not safe companions.

This is a valid syllogism, because it is not contrary to any of the rules, and it rests upon Canon II. [99], "If one term agrees and another disagrees, &c."—The whole term *persons of dissolute habits* disagrees with the whole term *a safe companion,* but the other term *some persons of improved minds* agrees with the former ; therefore, it does not agree with the latter, and the conclusion is

All whites are civilized;
The Hindoos are not whites;
Therefore, the Hindoos are not civilized.

This is not a valid syllogism, because it violates Rule third. The major term *not civilized* is distributed in the conclusion, but is not in the premises, and thus a fourth term in reality is introduced. Therefore, it cannot rest on either of the canons, for they allow only three terms to be compared together.

EXAMPLES.

1. No one is free who is enslaved by his appetites;
   A sensualist is enslaved by his apppetites;
   Therefore, a sensualist is not free.

2. All gold is precious;
   This mineral is precious;
   Therefore, this mineral is gold.

3. All wise legislators adapt their laws to the genius of the people;
   Solon adapted his laws to the genius of the people;
   Therefore, Solon was a wise legislator.

4. All pious men desire the freedom of their country;
Thomas Paine desired the freedom of his country;
Therefore, Thomas Paine was a pious man.

5. Warm countries alone produce wine;
Spain is a warm country;
Therefore, Spain produces wine.

6. Some poisons are vegetables;
No poisons are useful drugs;
Therefore, some useful drugs are not vegetables.

7. They, who subvert the foundations of morality, ought not to be respected;
Atheists subvert the foundations of morality;
Therefore, Atheists ought not to be respected;

8. All vegetables grow;
This animal grows;
Therefore, this animal is a vegetable.

9. White is a color;
Black is a color;
Therefore, black is white.

10. Light is contrary to darkness;
Feathers are light;
Therefore, feathers are contrary to darkness.

SECTION III.

IRREGULAR SYLLOGISMS.

106. **The Enthymeme** is a defective syllogism, having one premise suppressed; as,

Christianity teaches the way to future happiness;
Therefore, it should be diligently sought.

Here the major premise is suppressed. Supply it, and the syllogism is complete; thus,

Whatever teaches the way to future happiness should be diligently sought;
Christianity teaches the way to future happiness;
Therefore, Christianity should be diligently sought.

Every man is mortal;
Therefore, every king is mortal.

Here the minor premise is omitted. [92]

Frequently the conclusion is stated first; thus,

Enthusiasm should be avoided,
Because it leads astray from reason

107. A regular syllogism may be changed into an Enthymeme, by simply suppressing one of the premises, or by stating the conclusion first, and joining thereto one of the premises by the conjunction *for*, *as*, or *because*. As,

Whatever enables us to overcome difficulties is useful;
Perseverance enables us to overcome difficulties;
Therefore, perseverance is useful.

This may be reduced to a syllogism, thus:—

Whatever enables us to overcome difficulties is useful;
Therefore, perseverance is useful.

Or thus:

Perseverance enables us to overcome difficulties;
Therefore, perseverance is useful.

Or thus:

Perseverance is useful; for, it enables us to overcome difficulties.

Or thus:

Perseverance is useful; for,
Whatever enables us to overcome difficulties is useful.

108. To reduce an Enthymeme to a syllogism, observe first, what is the conclusion or point established. This contains the minor and major terms, [93] and the remaining term

must be the middle term. Having these, the syllogism may be easily constructed according to the rules, (Sec. I.) by supplying the implied premise.

In the last example, *perseverance is useful*, is the conclusion. Consequently the remaining term, *enables us to overcome difficulties*, is the middle term. [89] *Perseverance enables us to overcome difficulties* is implied, and makes the minor premise. [92]

109. The Sorites is a continued argument, consisting of a series of propositions arranged in such a manner, that the predicate of each forms the subject of the following proposition, except the concluding, which takes the subject of the first proposition; as,

There can be no enjoyment of property without government;
No government without laws enforced;
No laws enforced without a magistrate,
No magistrate without obedience;
And no obedience where every one acts as he pleases; therefore,
There can be no enjoyment of property where every one acts as he pleases.

110. Every Sorites contains as many syllogisms as there are propositions interven-

ing between the first and the last proposition. The above example contains four syllogisms, which may be drawn out, thus:

There can be no enjoyment of property without government;
There can be no government without laws enforced;
Therefore, there can be no enjoyment of property without laws enforced.

There can be no enjoyment of property without laws enforced.
No laws can be enforced without a magistrate;
Therefore, there can be no enjoyment of property without a magistrate.

There can be no enjoyment of property without a magistrate;
There can be no magistrate without obedience;
Therefore, there can be no enjoyment of property without obedience.

There can be no enjoyment of property without obedience;
There can be no obedience, where every one acts as he pleases;
Therefore, there can be no enjoyment of property where every one acts as he pleases.

111. THE EPICHIREMA is a compound argument, of which one or both the premises are separately proved, before the conclusion is drawn. As,

Unjust laws endanger the stability of government; *for they create discontent among the people;*

Laws restraining freedom of conscience are unjust; *for they require the people to abandon their dearest concerns;*

Therefore, laws restraining freedom of conscience, endanger the stability of government.

112. Irregular syllogisms are the most commonly employed in discourses of every kind; for the regular form of syllogism would not often consist with elegance of style, nor is it often requisite to produce conviction.

QUESTIONS ON SECTION III.

What is the enthymeme?

Can you give an example?

What premise is there omitted?

Is the conclusion frequently stated first?

Can you give an example?

Can you form it into a regular syllogism?

How may a regular syllogism be changed into an enthymeme?

How may an enthymeme be reduced to a syllogism?

What is the sorites?

Can you give an example?

How many syllogisms does it contain?

How many does every sorites contain?

What is an epichirema?

Are regular syllogisms most commonly employed in discourses? Why?

EXERCISES ON SECTION III.

Our language is not perfect, for no human invention is perfect.

This is an enthymeme, for it is an argument with one premise suppressed. [107] *Our language is not perfect* is the conclusion, [108] in which the major and minor terms are compared. [93] *No human invention is perfect* is the major premise, [91] for, in it the major term is compared with the third or middle term. Consequently, the suppressed premise must be the minor premise, [90] which is, *our language is a human invention,* for this is evidently implied. The syllogism completed will stand thus,

No human invention is perfect;
Our language is a human invention;
Therefore, our language is not perfect.

EXAMPLES.

1. The mind is a thinking substance.
A thinking substance is a spirit.

A spirit has no composition of parts.

That which has no composition of parts is indissoluble.

That which is indissoluble is immortal;

Therefore, the mind is immortal.

2. He is a good man, therefore, he is happy.

3. He is a miserable man, because he is vicious.

4. Whatever tends to subvert government should be deprecated;

Therefore, civil dissensions should be deprecated.

5. A religion attested by miracles is from God; for none but God can suspend the laws of nature, and God would not permit them to be suspended but for his glory.

The Christian religion is attested by miracles; for the friends and the enemies of Christianity have agreed in declaring it was;

Therefore, the Christian religion is from God.

6. Every man is an animal.
Every animal is a living creature.
Every living creature is a substance;
Therefore, every man is a substance.

7. No opinion that tends to immorality should be embraced.

Atheistical sentiments tends to immorality;

Therefore, atheistical sentiments should not be embraced.

8. It is lawful for one man to kill another, who lies in wait to kill him; for the laws of nature, and the customs of mankind sanction it.

Clodius lay in wait to kill Milo; for his equipage, arms, guards, movements, &c. prove it;

Therefore, it was lawful for Milo to kill Clodius.

9. With some of them God was not well pleased, for they were overthrown in the wilderness.

10. He that is of God heareth my words; ye therefore hear them not, because ye are not of God.

11. Men are free agents, for they are accountable beings.

12. Scepticism is an enemy to man, since it is an enemy to truth.

SECTION IV.

CONDITIONAL AND DISJUNCTIVE SYLLOGISMS. DILEMMA.

113. A **Conditional Syllogism** is one, in which the major premise is a conditional proposition; [58] as,

If there is a God, this world is governed by a providence;
But there is a God;
Therefore, this world is governed by a providence.

114. The clause containing the condition is called the **Antecedent**, that containing the assertion is called the **Consequent**.

115. **Rule.** *If the antecedent be granted so is the consequent, if the consequent be denied so is the antecedent; but not vice versa, that is, the antecedent being denied proves nothing, and the consequent being granted, proves nothing*; as,

If Samuel is a father he has authority;
But Samuel is a father;
Therefore, he has authority.

If Samuel is a father he has authority;
But he has not authority;
Therefore, he is not a father.

But, vice versa, the argument is not valid.

> If Samuel is a father he has authority;
> But Samuel is not a father;
> Therefore, he has not authority.

But he might have authority from some other relation or office. Again,

> If Samuel is a father he has authority;
> But he has authority;
> Therefore, he is a father.

116. Conditional Syllogisms may be reduced to regular syllogisms, by considering the antecedent the subject, and the consequent the predicate of an universal affirmative proposition.

> If the Atheists are right, the world exists without a cause;
> But the Atheists are not right;
> Therefore, the world does not exist without a cause.

Reduced thus:

> The case of the Atheists being right, is the case of the world existing without a cause;
>
> But the present case is not the case of the Atheist being right.
>
> Therefore, the present case is not the case of the world existing without a cause.

117. A DISJUNCTIVE SYLLOGISM is one whose major premise is a disjunctive proposition. [59]

The earth either moves in a circle or an ellipse.
But the earth does not move in a circle;
Therefore, it moves in an ellipse.

It is either spring, summer, autumn, or winter;
But it is not summer, autumn, or winter;
Therefore, it is spring.

118. Disjunctive syllogisms are easily convertible into conditional, and so brought under the foregoing rules; as,

If the earth does not move in a circle, it moves in an ellipse.
But it does not move in a circle;
Therefore, it moves in an ellipse.

119. THE DILEMMA is a complex conditional syllogism, of which the major premise has two or more conditional propositions and the minor, a disjunctive proposition; as,

If Æschines joined in the public rejoicings he is inconsistent; if he did not he is unpatriotic;
But Æschines either did or did not join in the public rejoicing,
Therefore, he is either inconsistent or unpatriotic.

The figure X is either equal to figure Y, or it is greater or less;
But figure X is neither greater nor less than Y;
Therefore, it is equal to Y.

This Dilemma may easily be reduced to two or more conditional syllogisms and these to regular syllogisms according to article 116.

If figure X is not equal to Y, it is greater;
But it is not greater than Y;
Therefore it is equal to Y.

If X is not equal to Y, it is less than Y;
But it is not less than Y;
Therefore it is equal.

The case of X not being equal to Y, is the case of X being greater than Y;
But the present case is not a case of X being greater than Y;
Therefore the present is the case of X being equal to Y.

The case of X not being equal Y, is the case of X being less than Y;
But the present case is not a case of X being less than Y;
Therefore the present is the case of X being equal to Y.

120. Thus all hypothetical syllogisms as well as all other arguments may be reduced to regular syllogisms, and so subjected to the test of the logical axiom. But it is more convenient in ordinary practice to try them by their own rules.

QUESTIONS ON SECTION IV.

What is a conditional syllogism?

What is the antecedent?

What is the consequent?

What is the rule by which the conditional syllogism is governed?

Can conditional syllogisms be reduced to regular syllogisms?

In what manner?

Give an example.

What is a disjunctive syllogism?

Give an example.

Can a disjunctive syllogism be reduced to a conditional syllogism?

In what manner?

Give an example.

Can this now be converted into a regular syllogism?

What is a dilemma?

Give an example.

Can a dilemma be reduced to a regular syllogism?

In what manner?

Give an example.

May all kinds of syllogism be reduced to a regular form?

Are all subject to the test of the logical axiom?

Can any syllogism be valid that does not conform to it?

Is it more convenient in ordinary practice to try them by their own rules?

EXERCISES IN SECTION IV.

This report is either true or false;
But it is not true,
Therefore it is false.

This is a disjunctive syllogism, for [117] it has a subject connected with one of two predicates. It may be changed to a conditional syllogism, thus:

If this report is not true, it is false;
But it is not true;
Therefore it is false.

This is a valid argument according to the rule for conditional syllogisms, [115] for the antecedent being granted the consequent is granted.

If the crops are not bad, corn must be cheap;
But corn is cheap;
Therefore the crops are not bad.

This is a conditional syllogism, for [113] it has for its major premise a conditional proposition. *If the crops are not bad*, is called the antecedent, because [114] it contains the condition; *corn must be cheap*, is the consequent, because [114] it contains the assertion. It is not a valid syllogism, according to the rule [115]. The consequent being granted proves nothing, for *corn* might be cheap by importation or some other way.

EXAMPLES.

1. If this man has a fever, he is sick;
But he is sick;
Therefore, he has a fever.

2. The world was created by chance, or by an intelligent agent;
But it was not created by chance;
Therefore, it was created by an intelligent agent.

3. If Louis Philip is a good king, France is likely to prosper;
But Louis Philip is a good king;
Therefore, France is likely to prosper.

4. If this man were wise, he would not speak irreverently of the scriptures in jest; if he were good, he would not do so in earnest;
But he does it either in jest or in earnest;
Therefore, he is either not wise, or he is not good.

5. If logic is useless it deserves to be neglected;
But logic is not useless;
Therefore, it does not deserve to be neglected.

6. Either money or produce will be scarce in the market;
But produce will not be scarce;
Therefore, money will be scarce.

7. If C be not the centre of the circle, some other point must be;
But no other point can be the centre;
Therefore, C is the centre of the circle.

8. If W. were a general, he would have power;
But W. is not a general;
Therefore, he has not power.

9. If W. be a general, he must be obeyed;
But W. must be obeyed;
Therefore, he is a general.

PART IV.

OF FALLACIES.

121. The fourth part of Logic treats of Fallacies.

122. A Fallacy is an unsound argument of any kind.

123. Fallacies are of two kinds; logical fallacies, and material fallacies.

124. I. Logical Fallacies are those, which, in form, violate any of the rules of syllogism.

In these the error is entirely in the process of reasoning, and the conclusion does not follow from the premises; as,

> Every rational agent is accountable;
> Brutes are not rational agents;
> Therefore brutes are not accountable.

This violates the third rule of syllogism.

125. II. MATERIAL FALLACIES are those, which, in form, do not violate any of the rules of syllogism, but the premises either are not wholly true, in fact, are unduly assumed, or result in a conclusion not relevant to the question, which is argued.

In material fallacies the fault is entirely in the matter of the propositions, and not in their form or connexion.

All bodies move towards the centre of the universe;
All bodies move towards the centre of the earth;
Therefore the centre of the earth is the centre of the universe.

In this example there is no fault in the process of reasoning; the conclusion results from the premises; but the minor premise contains a statement, which is not true in fact.

126. Fallacies are rarely presented in the syllogistic form. They are usually found in enthymemes, and the error lurks in the suppressed proposition.

Sometimes they are offered in the form of questions, so stated, that a false conclusion will be likely to be implied.

127. All jests are fallacies. They tend to excite laughter by betraying their fallacious character, while putting on the air of serious argument. The contrast amuses. For example,—A gentleman seeing a young man, whom he knew, going by with a looking-glass, cried out, "Ah, Joseph, don't carry that glass about, it will *reflect* on you." This, reduced to a syllogism, will be found to violate the first rule of syllogism, by having an equivocal *middle.*

128. To determine whether an argument be valid or fallacious, let the following directions be followed.

RULE.

Reduce the argument to a syllogistic form. If it be found incapable of taking that form, it is of course a fallacy. If it be reducible to a syllogism, observe carefully the import and the number of its terms and propositions, and apply the rules of syllogisms. If it violates any of them, it is a logical fallacy. If not, observe if either of the premises be untrue or inadmissable, or the same as the conclusion, *or result in a conclusion different from the one required. If so, it is a material fallacy.*

QUESTIONS ON PART IV.

Of what does part fourth treat?
What is a fallacy?
Into what two kinds are they divided?
What are logical fallacies?
Can you give an example?
What rule is here violated?
What are material fallacies?
Give an example.
Why is this a fallacy?
In what form are fallacies commonly found?
What are all jests?
What is the rule for discovering fallacies?

SECTION I.

LOGICAL FALLACIES.

129. It is evident that logical fallacies are as numerous, as are the ways of violating the five rules of syllogism.

The most common are the following:

130. I. THE FALLACY OF EQUIVOCATION, arising from an equivocal word, or from the ambiguous structure of the sentence.

This class will be found to violate the first rule of syllogism; as,

> All that believe shall be saved;
> The devils believe;
> Therefore the devils shall be saved.
>
> Every one desires happiness;
> Virtue is happiness;
> Therefore every one desires virtue.

In the first example the term *believe* is equivocal, having two different senses. There is, therefore, in reality, two terms; and the syllogism consequently has four terms, which is contrary to rule I. of syllogisms. In the second example, the minor premise is ambiguous.

131. II. THE FALLACY OF SIMILAR EXPRESSION arises from words, that are derived from the same root and are similar in sound, but not in sense; such as, art, artful, faith, faithful, design, designing. As,

> Designing men should be avoided;
> This man has many designs;
> Therefore, he should be avoided.

This violates rule I. of syllogism, for there are, in reality, four terms.

132. III. THE FALLACY OF COMPOSITION OR DIVISION is when the middle term is used collectively in one premise, and not collectively, but distributively in the other. As,

> Two and three are even and odd;
> Five is two and three;
> Therefore five is even and odd.

This is a fallacy of composition. *Two and three* is the middle term, and it is used distributively in the major premise, and collectively in the minor premise. Hence there are properly four terms in this argument, which is contrary to rule I. of syllogism.

> The planets are seven;
> Mercury and Venus are planets;
> Therefore Mercury and Venus are seven.

This is a fallacy of division. The middle term is used distributively in the minor premise, and collectively in the major.

133. IV. THE FALLACY OF ACCIDENT is when the middle term is understood simply and as to its essence, in one premise, but in

the other, is so used as to imply that something, which does not belong to it essentially, but *accidentally*, is taken into account with it. As,

Whatever is bought in the shambles is eaten by man;
Raw meat is bought in the shambles;
Therefore, raw meat is eaten by man.

Here, the middle term is, *raw meat*, and it is used in the minor premise, as considered simply, and as to its essence; but, in the major premise, it should be understood in connexion with something else, as,—*when properly cooked.* Hence, four terms are employed in reality in this argument, which violates rule I. of syllogism.

134. V. FALLACY OF ARGUING FROM A PARTICULAR TO A GENERAL is a process of reasoning the reverse of the logical axiom.

This fallacy will be found to violate the second or third rule of syllogism. As,

Every master of logic must understand the true process of reasoning;
Thomas understands the true process of reasoning;
Therefore he is master of logic.

Here rule II. is violated, for the middle term is undistributed, and you argue from a part to the whole.

QUESTIONS ON SECTION I.

What are logical fallacies?
How numerous are logical fallacies;
What are the most common kinds?
What is the fallacy of equivocation?
Give an example.
What rule does it transgress?
What is the fallacy of similar expression?
Give an example.
What rule is violated?
What is the fallacy of division or composition?
Give an example.
What rule is violated?
What is the fallacy of accident?
Give an example.
What rule does it violate?
What is the fallacy of arguing from a particular to a general?
Give an example.

What rule of syllogism does it violate?
What is the rule for discovering fallacies?

EXERCISES ON SECTION I.

Projectors ought not to be trusted;
This man has a project;
Therefore, he ought not to be trusted.

This argument is in the form of a syllogism. The terms *projectors* and *project*, are similar in sound, and derived from the same root, but different in sense. Here are, therefore, two middle terms, making four different terms in the argument, which is contrary to the first rule of syllogism. This is a fallacy of similar expression according to [131.]

He who necessarily goes or stays is not a free agent;
You must necessarily go or stay;
Therefore, you are not a free agent.

This is in the syllogistic form, but the middle term is used distributively in the major premise, and collectively in the minor premise.

This is, therefore, a fallacy of composition, according to [132.] It has more than three terms and violates the first rule of syllogism.

EXAMPLES.

1. No one is rich who has not enough;
No miser has enough;
Therefore, no miser is rich.

2. All that glitters is not gold;
Tinsel glitters;
Therefore, tinsel is not gold.

3. He who calls you a man speaks truly;
He, who calls you a fool, calls you a man;
Therefore, he who calls you a fool speaks truly.

4. Warm countries alone produce wine;
Spain is a warm country;
Therefore, Spain produces wine.

5. What we eat grew in the fields;
Loaves of bread are what we eat;
Therefore, loaves of bread grew in the fields.

6. What is universally believed, is true;
The existence of a God is true;
Therefore, the existence of a God is universally believed.

7. Whatever is universally believed must be true;
The immortality of the soul is not universally believed;
Therefore, it is not true.

8. What I am, you are not;
But I am a man;
Therefore, you are not.

SECTION II.

MATERIAL FALLACIES.

135. Material fallacies may be as numerous, as errors of reasoning, mistakes of judgment, or wilful duplicity can make them.

The most common may be included in the following classes:

136. I. THE FALLACY OF BEGGING THE QUESTION is that of inferring a conclusion

from premises substantially the same as the conclusion, or depending upon the conclusion; as when we attempt to prove a thing by itself, or by a synonymous word, or by something, which is itself to be proved by the very point you seek to establish. As,

God is eternal, because he is without beginning or end.

Opium produces sleep because it is soporific.

We know the scriptures are true from the infallible testimony of the church; and we know the church is infallible by the declaration of the scriptures.

The last example is what is called reasoning in a circle.

137. II. THE FALLACY OF FALSE ASSUMPTION, or, NOT A CAUSE FOR A CAUSE, is when the premises are unduly or unwarrantably assumed; as when we attempt to prove a thing by something that is false, or unknown, or partially stated. As,

All bodies tend to the centre of the universe;
All bodies tend to the centre of the earth;
Therefore, the centre of the earth is the centre of the universe.

Meteors have a volcanic origin;
For they cannot otherwise be accounted for.

We hold this doctrine to be true, by the authority of St. Paul in such and such texts.

This is a fallacy, if these texts do not contain the whole of the apostle's testimony to the point in question, and is sometimes called the fallacy of partial reference.

138. III. THE FALLACY OF MISTAKING THE QUESTION, is that, in which the premises are such as result in a conclusion different from the one required, but apparently the same. As,

> Alfred the great was a scholar;
> For he founded the university of Oxford.

139. The sophist will not always draw out the conclusion, but leave it to be inferred; for in that case its irrelevancy will be less likely to be detected.

140. This fallacy is often conveyed in appeals to the prejudice, the passions, or to personal considerations; sometimes in the form of objections, and sometimes by implication, in arguments, which go to prove a part of what is required. As,

> Gentlemen of the jury, this man is a friend to the rights of the people. Will you convict him?

This work is not evangelical. Look at the statements made in the eighth chapter. Are these warranted by the New Testament?

These objections are many and weighty. Can such a science be worthy of credit?

QUESTIONS ON SECTION II.

What are material fallacies?

How numerous are material fallacies?

Under what class may the most common be arranged?

What is the fallacy of begging the question?

Give examples.

Why are these fallacies?

What is the fallacy of false assumption?

Give examples.

Why are these fallacies?

What is the rule for discovering fallacies?

Apply it to these examples.

What is the fallacy of mistaking the question?

Is the conclusion often drawn out in this fallacy?

Why will the sophist leave it to be implied?

Give examples.

Apply to these the rule for discovering fallacies.

Why are they fallacies?

EXERCISES IN SECTION II.

Peter the hermit was not a Christian, for he was an ignorant fanătic.

This is a fallacy of mistaking the question; for the reason given will prove another point, but not the conclusion drawn. [138] This may be reduced to a syllogistic form; thus,

No ignorant fanatic is a Christian;
Peter the hermit was an ignorant fanatic;
Therefore, he was not a Christian.

Here the major premise, which is implied in the fallacy, is not admissable. In this form it would come under the class of fallacies of false assumption. [137]

Mathematical learning is injurious, for it leads to scepticism and infidelity.

This is a fallacy of false assumption, [137] for, the conclusion is formed by something that is false. Mathematical learning does not lead to scepticism. As a syllogism it would stand thus;

Whatever leads to scepticism and infidelity is injurious;

Mathematical learning leads to scepticism and infidelity;

Therefore, mathematical learning is injurious.

EXAMPLES.

1. The soul occupies the whole body, for it resides in every member.

2. The plant is capable of much growth, for it has great vegetative powers.

3. The soul suffers dissolution with the body at death. See Ecc. iii. 18, 19, 20; Job xxxiv, 15; Ps. cxlvi. 3, 4.

4. The bible cannot be the rule of faith, for men understand it very differently.

5. We may expect some dreadful disaster, for the sky last night was full of falling meteors.

6. The appearance of strange birds flying south, in the highest northern latitudes which have been explored, and of floating plants, as well as men who declare by signs that they come from the far north, indicate that the earth is concave about the poles, and the interior of the earth is inhabited.

7. Mahomet is a prophet, for the koran declares it; and the koran is true, for Mahomet received it from God, as he affirms.

8. Whatever is contrary to experience is not to be believed.

Miracles are contrary to experience;

Therefore, miracles are not to be believed.

9. Paul was not a Roman citizen for he was born at Tarsus in Cilicia.

10. Job was a great sinner, for he was overwhelmed with great calamities.

11. No evil should be allowed that good may come of it;

All punishment is an evil;

Therefore no punishment should be allowed that good may come of it.

12. No man can possess power to perform an impossibility;

A miracle is an impossibility;

Therefore, no man can possess power to perform a miracle.

SUPPLEMENT.

SECTION I.

MOODS AND FIGURES OF SYLLOGISMS.

This subject may be advantageously studied after the scholar has become perfectly familiar with the foregoing, and is expert in the application of all the rules of logic. In that case it may serve to discipline the mind, otherwise it will only perplex. One may be an able logician without the doctrine of moods and figures.

141. **The Mode of a Syllogism** is the designation of the quantity and quality of its propositions.

This is done by the symbols A, E, I, and O, which stand respectively for the universal affirmative, universal negative, particular affirmative, and particular negative.

The following, for example, is A, A, A.

A. All animals are mortal;
A. All men are animals;
A. Therefore, all men are mortal.

The following is E, A, E.

E. No human invention is perfect;
A. Language is a human invention;
E. Therefore, no language is perfect.

142. The whole number of the Moods of valid syllogisms is only eleven. A, A, A,—A, A, I,—A, E, E,—A, E, O,—A, I, I,—A, O, O,—E, A, E,—E, A, O,—E, I, O,—I, A, I,—O, A, O.

143. As there are sixty-four different ways in which it is possible for A, E, I, O, to be combined, to form a syllogism, there might be fifty three other moods formed, as E, E, A,—I, I, I, &c.; but they would offend against one or more of the five rules of syllogism. As,

I. Some birds are animals;
I. Some fish are animals;
I. Therefore, some fish are birds.

E. No human invention is perfect;
E. No language is perfect;
A. Therefore language is a human invention.

These examples are contrary to the fifth rule of syllogisms. Two negative or two particular premises prove nothing.

144. THE FIGURE OF A SYLLOGISM denotes the situation of the middle term, in respect to the major and minor terms.

145. FIGURE FIRST is when the middle term is the subject of the major premise and the predicate of the minor premise. As,

A. Every wicked man is miserable;
A. Every tyrant is a wicked man;
A. Therefore, every tyrant is miserable.

E. No discontented man is a happy man;
A. Every wicked man is a discontented man;
E. Therefore, no wicked man is a happy man.

A. All the faithful are dear to God;
I. Some that are afflicted are faithful;
I. Therefore, some that are afflicted are dear to God.

E. No virtue is an evil;
I. Some difficult things are virtues;
O. Therefore, some difficult things are not evils.

146. To this figure the logical axiom applies directly; and to this figure all the other figures may be reduced.

147. **Figure Second** is when the middle term is the predicate of both the major and the minor premises; as,

E. No happy man is discontented;
A. Every wicked man is discontented;
E. Therefore, no wicked man is a happy man.

A. Every wicked man is discontented;
E. No happy man is discontented;
E. Therefore, no happy man is a wicked man.

E. No evil is a virtue;
I. Some difficult things are virtues;
O. Therefore, some difficult things are not evils.

A. Every good man is afflicted;
O. Some rich men are not afflicted;
O. Therefore, some rich men are not good men.

148. **Figure Third** is when the middle term is the subject of both the premises. As,

A. All the faithful are dear to God;
A. All the faithful are afflicted;
I. Therefore, some that are afflicted are dear to God.

I. Some of the faithful are afflicted;
A. All the faithful are dear to God;
I. Therefore, some that are dear to God are afflicted.

A. All the faithful are dear to God;
I. Some of the faithful are afflicted;
I. Therefore, some that are afflicted are dear to God.

E. No virtue is an evil;
A. All virtues are difficult;
O. Some difficult things are not evils.

O. Some Christians are not true believers;
A. All Christians profess faith;
O. Therefore, some who profess faith are not true believers.

E. No virtue is an evil;
I. Some virtues are difficult;
O. Therefore, some difficult things are not evils.

149. FIGURE FOURTH is when the middle term is the predicate of the major and the subject of the minor premise.

150. This is the reverse of the first figure and is the most awkward of all. As,

A. Every tyrant is a wicked man;
A. Every wicked man is miserable;
I. Therefore, some that are miserable are tyrants.

A. Every wicked man is discontented;
E. No discontented man is happy;
E. Therefore, no happy man is a wicked man.

I. Some afflicted are faithful;
A. All the faithful are dear to God;
I. Therefore, some that are dear to God are afflicted.

E. No evil is a virtue;
A. All virtues are difficult;
O. Therefore, some difficult things are not evils.

E. No evil is a virtue;
I. Some virtues are difficult;
O. Therefore, some difficult things are not evils.

151. Each of the eleven allowable moods will not go in every figure, for it will violate some of the rules of syllogism in one figure, though not in another. For example, A,A,A, which goes in the first figure will not go in the third figure.

Figure 1st. All wicked men are miserable;
All tyrants are wicked men;
Therefore, all tyrants are miserable.

Figure 3d. All wicked men are miserable;
All wicked men are tyrants;
Therefore, all tyrants are miserable.

This violates rule III. of syllogism, for the term *tyrants* is distributed in the conclusion, though not in the premises. Besides, the minor premise is incorrect.

152. Some of the moods also, which might be admitted in some of the figures are useless, as having a particular conclusion when a universal might be drawn.

For example, A, A, I, will go in the fourth figure, but in the first figure it is useless.

Figure 4th. A. Every tyrant is a wicked man;
A. Every wicked man is miserable;
I. Therefore, some that are miserable are tyrants.
Figure 1st. A. Every wicked man is miserable;
A. Every tyrant is a wicked man;
A. Therefore, every tyrant is miserable.

But,

I. Therefore, some tyrants are miserable,

would be a useless conclusion, for a universal conclusion is legitimate.

153. For these reasons, out of the forty-four allowable moods, which might possibly go into the four figures, only nineteen are retained. Examples of all the nineteen are found above, under the definitions of the four figures.

154. To assist in remembering these moods and the figure in which they are found the following mnemonic lines have been invented.

First. bArbArA, cElArEnt, dArII, fErIO.
Second. cEsArE, cAmEstrEs, fEstInO, bArOkO.
Third. dArAptI, dIsAmIs, dAtIsI, fElAptOn, bOkArdO, fErIsO.
Fourth. brAmAntIp, cAmEnEs, dImArIs, fEsApO, frEsIsOn.

Here, it will be seen, are only eleven moods; but some are employed in more than one figure, as E, I, O, making nineteen in all the four figures.

155. If any syllogism be not found in these lines, it cannot be a valid syllogism; it is a logical fallacy.

156. The utility of the mnemonic lines is like that of duly certified weights and measures, by which we test the size or weight of bodies, without the necessity of a minute and tedious calculation.

SECTION II.

REDUCTION.

157. The process, by which the moods of the last three figures, are changed into a mood of the first figure, is called REDUCTION.

158. This is done in two ways; by Ostensive Reduction and by Reductio ad impossibile.

159. OSTENSIVE REDUCTION is performed by the conversion of one of the premises, A into I, E into E, I into I, and by transposing the premises when occasion requires; [80, 81, 82.]

For example, take Cesare of the second figure.

cEs. No happy man is discontented;
A. Every wicked man is discontented;
rE. Therefore no wicked man is a happy man.

This may be converted into Celarent of the first figure, by the simple conversion of the major term, [77.] thus:

cE. No discontented man is a happy men;
lA. Every wicked man is a discontented man;
rEnt. Therefore, no wicked man is a happy man.

Take now Camestres of the second figure and convert that also into Celarent. To do this, you will only have to convert the minor premise, and transpose the premises, as will be seen in the examples.

cAm. Every wicked man is discontented;
Es. No happy man is discontented; *(convert and transpose.)*
trEs. Therefore no happy man is a wicked man.

eE. No discontented man is a happy man;
lA. Every wicked man is discontented;
rEnt. Therefore, no wicked man is a happy man.

160. In like manner, all the moods of the last three figures can be reduced into one of the four perfect moods of the first figure.

161. In the mnemonic lines, the initial letters *b*, *c*, *d*, *f*, show to which mood of the first figure, the reduction is made, viz. *barbara*, *celarent*, *darii*, or *ferio*. The letter *m* signifies that the premises are to be transposed, as above, in *Camestres*,—the letter *s*, denotes that the proposition, which the preceding vowel stands for, is to be converted by simple conversion, and *p*, by particular conversion; but *p*, in *Bramantip*, marks that the premises, when changed, warrant a universal conclusion instead of a particular. The symbols A. E. I. O. mark the Moods, i. e. the quality or quantity of the propositions.

162. Reductio ad Impossibile is when you reduce a mood to the first figure, by substituting the contradictory of the conclusion, for one of the premises; by which an absurdity follows, which proves not directly that the

conclusion is true, but that it cannot be false.

Thus *Baroko*, in the second figure,

bAr.	Every good man is afflicted;
Ok.	Some rich men are not afflicted;
O.	Therefore *some* rich men are not good men.

bAr.	Every good man is afflicted;
bA.	All rich men are good men;
rA.	Therefore all rich men are afflicted.

Which conclusion is notoriously false, and the original conclusion, which you had drawn is, therefore, true.

163. The letter *k*, in the mnemonic lines denotes, that the proposition indicated by the vowel immediately preceding, is to be substituted by the contradictory of the conclusion: the other letters, not above explained, have no signification.

QUESTIONS ON THE SUPPLEMENT.

What is meant by the moods of syllogisms?

By what symbols is this expressed?

What does A. E. I. O., stand for respectively?

What is the whole number of moods in valid syllogisms?

What is the whole number of ways in which A. E. I. O., in any syllogistic form, may be combined?

Can you write them on a slate?

How many are not valid syllogisms? why?

Give examples.

What rules do these examples violate?

What is meant by the figures of a syllogism?

What is the first figure?

Give four different examples of this?

Will the Logical axiom apply to this figure directly?

May all other figures be reduced to it?

What is figure second?

Give four different examples of this figure.

What is figure third?

Give six different examples of it.

What is the fourth figure?

Is it the reverse of the first figure?

Give five different examples of it?

Will each of the eleven allowable moods go in every figure?

For what reason?

Give examples?

Are any of the moods, that might be admitted in a figure, useless?

Why? Give an example.

How many allowable moods might possibly go in the four figures?

Can you show this on your slate?

How many of these moods are retained in the four figures?

What has been invented to assist in remembering these moods?

Can you repeat these memorial lines?

Can the moods in the last three figures be changed to one of the moods of the first figure?

What is this change called?

How many kinds of reduction are there?

What is ostensive reduction?

Give examples.

Take Festino of the second figure and reduce it to Ferio of the first.

What do the letters b. c. d. f. denote in the memorial lines?

What does m. denote?

What does s. denote?

What does p. denote?

What does p. denote in Bramantip ?
What is reductio ad impossibile ?
Give an example.
What does k. denote ?

EXERCISES IN THE SUPPLEMENT.

Some called christians are not true believers.

All called christians profess faith ;

Therefore some who profess faith are not true believers.

This is a syllogism in the third figure, for [148] the middle term is made the subject of both premises. It is mood O, A, O, and is *bokardo* in the memorial lines : it is therefore a valid syllogism. [154] Moreover, the conclusion cannot be false, as may be shown by reductio ad impossibile. [162] Substituting the contradictory of the conclusion, for the major premise, as indicated by *k*, and you have *Barbara* in the first figure,

All who profess faith are true believers ;
All called christians profess faith ;

Therefore, all called christians are true believers.

which is false, as you have asserted the opposite in your original premise. Hence it appears that the original conclusion cannot be false.

All wise legislators adapt their laws to the genius of their country;
Solon adapted his laws to the genius of his country;
Therefore, Solon was a wise legislator.

This is in the second figure, for [147] the middle term is made the predicate of both premises. Its mood is A, A, A, but no such mode is found in the second figure of the mnemonic terms. Therefore it is not a valid syllogism. [155] It violates the second rule of syllogisms, having an undistributed middle term.

No freeman is enslaved by appetite;
Some wealthy men are enslaved by appetite;
Therefore, some wealthy men are not freemen.

This syllogism is in figure second, because [147] the middle term is made the predicate of both premises. Its mode is, E, I, O, and it is rendered in the mnemonic lines by *festino.* It is therefore a valid syllogism. [154] To see that the Logical axiom applies to it, it may be reduced to *ferio* of the first figure, by simple conversion [159] of the major premise as indicated by *s.*

Thus,

None enslaved by appetite are freemen ;

Some wealthy men are enslaved by appetite ;

Therefore some wealthy men are not freemen ;

Here we see, that, what is asserted of a class in the premises, is asserted in the conclusion of certain individuals, under that class. [2]

EXAMPLES.

1. Whoever has reflection and volition, has the essential properties of mind ;

Mankind has reflection and volition ;

Therefore, mankind has the essential properties of mind.

2. Whatever is universally believed, must be true ;

The existence of God is not universally believed;

Therefore it is not true.

3. Whoever is capable of deliberate crime is responsible;

An infant is not capable of deliberate crime;

Therefore, an infant is not responsible.

4. Some philosophers reckon virtue good in itself;

The Epicureans did not reckon virtue good in itself;

Therefore, the Epicureans were not philosophers.

5. Prudence has for its object the benefit of individuals;

But prudence is a virtue;

Therefore, some virtue has for its object the benefit of individuals.

6. Whatever is expedient is conformable to nature.

Whatever is conformable to nature is not hurtful to society.

Therefore, what is hurtful to society is never expedient.

7. All true patriots are friends to religion;
Some great statesmen are not friends to religion;
Therefore, some great statesmen are not true patriots.

8. No man is happy who is not secure;
No tyrant is secure;
Therefore, no tyrant is happy.

9. All true christians have peace;
Some afflicted men are true christians;
Therefore, some afflicted men have peace.

10. No uncandid man is fit to reason correctly;
Some infidels are uncandid;
Therefore, some infidels are not fit to reason correctly.

APPENDIX.

MISCELLANEOUS EXAMPLES FOR PRACTICE.

LESSON I.

1. That which is followed by repentance is not to be desired:
Some pleasures are followed by repentance:
Therefore some pleasures are not to be desired.

2. If the world existed from eternity, there would be records prior to the Mosaic: and if it were produced by chance it would not bear marks of design.
But there are no records prior to the Mosaic; and the world does not bear marks of design; therefore,
The world neither existed from eternity nor is it the work of chance.

3. Every dispensation of providence is beneficial.
Afflictions are dispensations of providence;
Therefore they are beneficial.

4. If there is a God, he ought to be worshipped.
But there is a God.
Therefore, he ought to be worshipped.

5. If God is infinitively wise, and acts with perfect freedom, he does nothing but what is best.
But God is infinitely wise, and acts with perfect freedom.
Therefore, he does nothing but what is best.

6. If God were not a Being of infinite goodness, neither would he consult the happiness of his creatures.
But God does consult the happiness of his creatures.
Therefore, he is a Being of infinite goodness.

7. The world is either self-existent, or the work of some finite, or of some infinite being.
But it is not self-existent, nor the work of a finite being.
Therefore, it is the work of an infinite Being.

8. Every human virtue is to be sought with diligence.
Prudence is a human virtue.
Therefore, Prudence is to be sought diligently.

9. No deceitful man merits confidence.
All honest men merit confidence.
Therefore, no honest man is deceitful.

10. Every thing base should be avoided.
Some pleasures are base.
Therefore, some pleasures should be avoided.

LESSON II.

1. He who follows evil counsel will meet with trouble.
Rehoboam followed evil counsel.
Therefore, Rehoboam met with trouble.

2. No good citizen will violate the laws of God and man.
Duelists do that which violates both the laws of God and man.
Therefore, duelists are not good citizens.

3. Things offensive to delicacy should not be used.
Therefore, some words should not be used.

4. That which is prudent is commendable.
Moderation is prudent;
Therefore, moderation is commendable.

5. We are bound to set apart one day in seven, for religious duties, if the fourth commandment is obligatory on us; but we are bound to set apart one day in seven for religious duties; and hence it appears that the fourth commandment is obligatory on us.

6. Seeing that I have experienced calamity in the snares of pleasure; I should abandon its pursuit.

7. A desire to gain by another's loss is a violation of the tenth commandment; all gaming therefore, since it implies a desire to profit at the expense of another, involves a breach of the tenth commandment.

8. All the fish that the net enclosed, were an indiscriminate mixture of various kinds: those that were set aside and saved as valuable, were fish that the net enclosed: therefore those that were set aside and saved as valuable, were an indiscriminate mixture of various kinds.

9. No one who lives with another on terms of confidence, is justified, on any pretence, in killing him: Brutus lived on terms of confidence with Cæsar; therefore he was not justified, on the pretence he pleaded, in killing him.

10. The principles of justice are variable: the appointments of nature are invariable: therefore the principles of justice are no appointment of nature.

LESSON III.

1. All good christians are saved.
All good christians have sinned;
Therefore, some who have sinned will be saved.

2. Knowledge is better than riches.
Virtue is better than knowledge;
Therefore, virtue is better than riches.

3. Christianity requires us to believe what the Apostles wrote.

St. Paul is an Apostle;

Therefore, christianity requires us to believe what St. Paul wrote.

4. It is necessary that a general understand the art of war.

But Caius did not understand the art of war;

Therefore, it is necessary that Caius should not be a general.

5. A total eclipse of the sun would cause darkness at noon.

It is possible that the moon at that time may totally eclipse the sun.

Therefore, it is possible that the moon may cause darkness at noon.

6. The fogs vanish as the sun rises.

But the fogs have not yet begun to vanish;

Therefore the sun is not yet risen.

7. The sun is a senseless being;

What the Persians worshipped is the sun;

Therefore, what the Persians worshipped is a senseless being.

8. If every creature be reasonable, every brute is reasonable.

But no brute is reasonable;

Therefore, no creature is reasonable.

LESSON IV.

1. If we love any person all emotions of hatred towards him cease.

If all emotions of hatred towards a person cease, we cannot rejoice in his misfortunes.

If we rejoice not in his misfortunes, we certainly wish him no injury.

Therefore, if we love a person we wish him no injury.

2. A thinking substance is a spirit.
A spirit has no extension.
What has no extension has no parts.
What has no parts is indissoluble.
Therefore, the mind is immortal.

3. If God did not create the world perfect in its kind, it must either proceed from want of inclination or from want of power.

But it could not proceed from want of inclinotion or from want of power;

Therefore, God created the world perfect in its kind, or which is the same thing, it is absurd to say that he did not create the world perfect in its kind.

4. Whatever is immaterial is indissoluble;
The mind of man is immaterial;
Therefore, the mind of man is indissoluble.

5. Whatever perceives, judges, and reasons, is a thinking substance.

The human mind perceives, judges, and reasons;

Therefore, the human mind is a thinking substance.

6. God is omnipotent.

An omnipotent being can do every thing possible.

He that can do every thing possible, can do whatever involves not a contradiction.

Therefore, God can do whatever involves not a contradiction.

7. Things equal to the same thing are equal to one another;

Therefore, these two triangles, each equal to the square of a line of three inches, are equal between themselves.

8. What is vicious is not expedient.

Whatever conduces to the acqnisition of wealth is expedient.

Therefore, whatever conduces to the acquisition of wealth cannot be vicious.

9. What is not a being, since it can have no attributes, can be no agent nor act, cannot produce any thing;

What is called nothing, is not a being, has no attribute, is not an agent, nor can it act; therefore, what is called nothing, cannot act or produce any thing.

10. The order and constitution of things established and maintained in the universe, is the law of Supreme intelligence.

Nature is the order and constitution of things established and maintained in the universe; therefore,

Nature is the law of Supreme Intelligence.

LESSON V.

1. If virtue is voluntary, vice is voluntary; virtue is voluntary; therefore, so is vice.

2. No impostors reject, throughout a long life worldly wealth, distinction and pleasure, and suffer poverty, toil, contempt and death, in attestation of a falsehood;

St. Paul and the other apostles thus rejected worldly wealth,&c., and suffered poverty, toil, contempt, and death in attestation of the truth of their doctrine; therefore St. Paul and the other apostles were not imposters.

3. All that understand the whole of Euclid understand the first six books of Euclid;

John understands the first six books of Euclid;

Therefore, John understands the whole of Euclid.

4. Every classic is learned;

Every learned man is a mathematician;

Therefore every mathematician is a classic.

5. All apothecaries are chemists;
No apothecary is a druggist;
No druggist is a chemist.

6. If the Scriptures are the word of God, it is important that they should be well explained.

If it is important that they should be well explained, they deserve to be diligently studied.

If they deserve to be diligently studied; an order of men should be set aside for that purpose.

But the Scriptures are the word of God; therefore an order of men should be set aside for that purpose.

7 Whatever is an enemy to truths essential to our welfare, is an enemy to man.

Prejudice is an enemy to truths essential to our welfare;

Therefore, prejudice is an enemy to man.

8. Testimony is a kind of evidence which is very likely to be false; the evidence on which most men believe that there are pyramids in Egypt is testimony; therefore the evidence on which most men believe that there are pyramids in Egypt is very likely to be false.

9. The religion of the ancient Greeks and Romans was a tissue of extravagant fables and groundless superstitions, credited by the vulgar and the weak, and maintained by the more enlightened, from selfish or political views; the same was clearly the case with the religion of the Egyptians; the same may be said of the Brahminical worship of India, and the religion of Fo, professed by the Chinese; the

same, of the romantic mythological system of the Peruvians; of the stern and bloody rites of the Mexicans and those of the Britons and of the Saxons; hence we may conclude that all systems of religion, however varied in circumstances, agree in being superstitions kept up among the vulgar, from interested or political views in the more enlightened classes.

LESSON VI.

I. No man can possess power to perform impossibilities.
A miracle is an impossibility;
Therefore no man can possess power to perform a miracle.

2. War is the source of numerous evils.
Some wars are just; therefore,
Some just actions are the source of numerous evils.

3. Protection from punishment is plainly due to the innocent; therefore, as you maintain that this person ought not to be punished, it appears that you are convinced of his innocence.

4. All the most bitter persecutions have been religious persecutions; among the most bitter persecutions were those which occurred in France during the revolution; therefore they must have been religious persecutions.

5. He who cannot possibly act otherwise than he does, has neither merit nor demerit in his action; a liberal and benevolent man cannot possibly act otherwise than he does in relieving the poor; therefore such a man has neither merit nor demerit in his action.

6. The early and general assignment of the epistle to the Hebrews to St. Paul as its author, must have been either from its professing to be his, and containing his name, or from its really being his; since, therefore, the former of these is not the fact, the epistle must be Paul's.

7. All the miracles of Jesus would fill more books than the world could contain; the things related by the Evangelists are the miracles of Jesus; therefore the things related by the Evangelists would fill more books than the world could contain.

8. Of two evils the less is to be preferred; occasional turbulence, therefore, being a less evil than rigid despotism is to be preferred to it.

9. According to theologians, a man must possess faith in order to be acceptable to the Deity; now he who believes all the fables of the Hindoo mythology must possess faith; therefore, such an one must, according to theologians, be acceptable to the Deity.

10. If Abraham were justified, it must have been either by faith or by works, now he was not justified by faith (according to St. James,) nor by works, (according to St. Paul,) therefore Abraham was not justified.

LESSON VII.

Smallet, in a town in France, having met at an inn with a scolding chamber-maid and an awkward red haired hostler, who had engrossed his whole attention, immediately wrote in his journal—"The men in this town are all red haired, and the women are all scolds."

The stoics proved that the world was a great animal, thus: That which has the use of reason is better than that which has not. Now there is nothing better than the world; therefore, the world has reason and is a great animal.

The sophists used the following argument against marriage. If a woman that marries be lovely, she will create jealousies; if she be ugly, she will not delight; therefore, it is not good to marry.

An Irishman, hearing much of the charms of a feather-bed, took a feather and laid it on a rock for a pillow. He awoke with a head-ache. "Arrah," said he, "if these be your feathers, give me my straw."

Warm countries alone produce the Banian-tree. Spain is a warm country; therefore, Spain produces the Banian-tree.

A canal boat was passing under a bridge, and some one on deck cried out, "Look out!" A Dutchman lying in his berth, heard the cry, and stuck his head out of the window, and received a severe blow on his forehead. "Vat for," cried he, in a passion, "did you tell me to 'look out?' vy did you not tell me to 'look in?'"

As I would not trifle with the prejudices of the poor, because it is illiberal, so I would not always yield to them, because it is unwise.

Pleasures are deceitful; therefore, young men should curb their inclinations.

Fugitive Cant, which is always in a state of increase or decay, cannot be regarded as any part of the durable materials of a language, and therefore must be suffered to perish with other things unworthy of preservation.

Books are seldom correct, because human nature is fallible.

LESSON VIII.

Let the learner analyze the following, giving,

1st, the terms; 2d, the propositions; 3d, the syllogisms.

Ye men of Athens, I perceive that in all things ye are too superstitious. For as I passed by, and beheld your devotions, I found an altar with this inscription: "To the unknown God." Whom therefore ye ignorantly worship, him declare I unto you. God that made the world and all things therein, seeing that he is Lord of heaven and earth, dwelleth not in temples made with hands; neither is worshipped with men's hands, as though he needed any thing, seeing he giveth to all life, and breath, and all things; and hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation; that they should seek the Lord, if haply they might feel after him and find him, though he be not far from every one of us:

For in him we live, and move and have our being; as certain also of your own poets have said, for we are also his offspring.

Forasmuch then as we are the offspring of God, we ought not to think that the Godhead is like unto gold, or silver, or stone, graven by art and man's device.

And the times of this ignorance God winked at but now commandeth all men every where to repent;

Because he hath appointed a day, in the which he will judge the world in righteousness, by that man whom he hath ordained; whereof he hath given assurance unto all men in that he hath raised him from the dead.

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